IN THE CLAIMS:

1. (Currently Amended) A system for indexing and manipulating a set of backup data stored on a destination system interconnected with a source file system having source data from which the backup data is transmitted to the destination system comprising:

a management application executed by a computer, where the management application (a) communicates with the destination system and that accesses data identifiers ~~that identify the data as directories, files, or qtrees~~ related to the backup data organized in a tree structure and representing a plurality of persistent consistency point images (PCPIs) of the data, each with associated information related to creation time, (b) scans the plurality of PCPIs stored on the destination system to generate an index of directories, files, or ~~qtress~~qtrees, where each directory, file, or qtree has one or more versions created at one or more different points in time, and (c) organizes the data identifiers into a structure that enables the data to be displayed according to directory, file or qtree; and

a user interface to select a directory, file, or qtree to view, where the management application returns a list of only the selected directory, file, or qtree and the one or more versions of the selected directory, file, or qtree, wherein each version of the selected directory, file, or qtree is stored in a separate PCPI.

2. (Original) The system as set forth in claim 1 further comprising a database that stores the data identifiers and rules for handling the data identifiers for retrieval by the user interface and the management application.

3. (Previously Presented) The system as set forth in claim 2 further comprising, in the destination system, a network data management protocol (NDMP) extension, communicating with a storage operating system of the destination system and providing NDMP-based communication between the management application and the storage operating system.

1   4. (Original) The system as set forth in claim 3 further comprising a job framework that

2   organizes a plurality of backup operations and restore operations by the management ap-

3   plication and that communicates with the user interface so as to enable a user to access

4   information with respect to status of the backup operations and restore operations organ-

5   ized by the job framework.

1   5. (Original) The system as set forth in claim 4 further comprising a scheduler that inter-

2   faces with the source system and that performs the backup operations, transmitting the

3   backup data from the source system to the destination system at a predetermined time in-

4   terval.

1   6. (Original) The system as set forth in claim 5 wherein the user interface includes a

2   screen that enables a user to set a desired lag time after which failure to complete a

3   scheduled backup operation caused an event to occur.

1   7. (Currently Amended) The system as set forth in claim 1 further comprising the user

2   can select (a) a listing of source data entries indexed by names of the source system and

3   (b) a listing of source data entries indexed by names of volumes of the destination system

4   in which the backup data from the source data resides.

1   8. (Original) The system as set forth in claim 7 wherein each of the entries of each listing

2   includes a browse backups button that enables a user to view backup data stored on the

3   destination system that is associated respectively with each of the entries.

1   9. – 11. (Cancelled)

1   12. (Previously Presented) The system as set forth in claim 8 wherein each of the entries

2   of each listing includes a restore button that enables a user to view restorable backup data

3

3   structures with respect to each of the entries and to restore the backup data structures to

4   the source data.

1   13. (Cancelled)

1   14. (Previously Presented) The system as set forth in claim 12 wherein each qtree in-

2   cludes qtree relationships with respect to other qtrees within the source system.

1   15. (Original) The system as set forth in claim 14 wherein the user interface includes a

2   command for destroying a qtree relationship between the source data and a selected vol-

3   ume of the backup data in the destination system.

1   16. (Original) The system as set forth in claim 15 wherein the management application is

2   adapted to delete a respective qtree associated with the qtree relationship on the destina-

3   tion system in response to activation of the command for destroying.

1   17. (Original) The system as set forth in claim 1 further comprising, in the user interface,

2   a screen that enables selected of the source data to be listed as entries and to be transmit-

3   ted as backup data to the destination system at a time separate from a scheduled backup

4   time.

1   18. (Currently Amended) A method for indexing and manipulating a set of backup data

2   stored on a destination system interconnected with a source file system having source

3   data from which the backup data is transmitted to the destination system comprising:

4   communicating, by a management client, with the destination system and access-

5   ing data identifiers ~~that identify the data as directories, files, or qtrees~~ related to the

6   backup data organized in a tree structure and representing a plurality of persistent consis-

7   tency point images (PCPIs) of the data, each with associated information related to crea-

8   tion time;

9   scanning the plurality of PCPIs stored on the destination system to generate an

10 index of directories, files, or ~~qtress~~qtrees, where each directory, file, or qtree has one or

11 more versions created at one or more different points in time;

12   organizing the data identifiers into a structure that enables the data to be dis-

13 played according to directory, file, or directory; and

14   selecting, on a user interface, a directory, file, or qtree to view, where the man-

15 agement application returns a list of only the selected directory, file, or qtree and the one

16 or more versions of the selected directory, file, or qtree, wherein each version of the se-

17 lected directory, file, or qtree is stored in a separate PCPI.

1 19. (Original) The method as set forth in claim 18 further comprising storing, in a data-

2 base, the data identifiers and rules for handling the data identifiers for retrieval by the

3 user interface and the management application.

1 20. (Previously Presented) The method as set forth in claim 19 further comprising provid-

2 ing, in the destination system, a network data management protocol (NDMP) extension,

3 communicating with a storage operating system of the destination system and providing

4 NDMP-based communication between the management application and the storage oper-

5 ating system.

1 21. (Original) The method as set forth in claim 20 further comprising organizing, in a job

2 framework, a plurality of backup operations and restore operations by the management

3 application and that communicates with the user interface so as to enable a user to access

4 information with respect to status of the backup operations and restore operations organ-

5 ized by the job framework.

1 22. (Original) The method as set forth in claim 21 further comprising interfacing a sched-

2 uler with the source system and performing, at scheduled times, backup operations that

3   transmit the backup data from the source system to the destination system at a predeter-

4   mined time interval.

1   23. (Original) The method as set forth in claim 22 wherein the user interface includes a

2   screen that enables a user to set a desired lag time after which failure to complete a

3   scheduled backup operation caused an event to occur.

1   24. (Previously Presented) The method as set forth in claim 18 further comprising select-

2   ing (a) a listing of source data entries indexed by names of the source system and (b) a

3   listing of source data entries indexed by names of volumes of the destination system in

4   which the backup data from the source data resides.

1   25. (Original) The method as set forth in claim 24 wherein each of the entries of each list-

2   ing includes a browse backups button that enables a user to view backup data stored on

3   the destination system that is associated respectively with each of the entries.

1   26. – 28. (Cancelled)

1   29. (Previously Presented) The method as set forth in claim 24 wherein each of the en-

2   tries of each listing includes a restore button that enables a user to view restorable backup

3   data structures with respect to each of the entries and to restore the backup data structures

4   to the source data.

1   30. (Cancelled)

1   31. (Previously Presented) The method as set forth in claim 29 wherein each qtree in-

2   cludes qtree relationships with respect to other qtrees within the source system.

1   32. (Original) The method as set forth in claim 31 wherein further comprising providing,

2   in the user interface, a command for destroying a qtree relationship between the source

3   data and a selected volume of the backup data in the destination system.

1   33. (Previously Presented) The method as set forth in claim 32 further comprising, in re-

2   sponse to activation of the command for destroying, deleting a respective qtree associated

3   with the qtree relationship on the destination system in response to activation of the

4   command for destroying.

1   34. (Original) The method as set forth in claim 18 further comprising providing, in the

2   user interface, a screen that enables selected of the source data to be listed as entries and

3   to be transmitted as backup data to the destination system at a time separate from a

4   scheduled backup time.

1   35. (Currently Amended) A method for managing backup of data from a source system to

2   a destination system and restore of backup data, relative to source data, from the source

3   system to the destination system comprising:

4   communicating, by a management application, with each of the source system and

5   the destination system and transmitting requests to read a data organization residing on

6   each of the source system and the destination system to derive an index of directories,

7   files, or qtrees for each of the source system and the destination system;

8   scanning a plurality of persistent consistency point images (PCPIs) stored on the

9   destination system to generate the index of directories, files, or ~~qtress~~qtrees, where each

10   directory, file, or qtree has one or more versions created at one or more different points in

11   time;

12   selecting a directory, file, or qtree to view; and

13   displaying, with a user interface communicating with the management applica-

14   tion, only the selected directory, file, or qtree related to active data on the source system

15   derived from source system index related to active data and the selected directory, file, or

16 qtree related to backup data on the destination system derived from destination system

17 index related to PCPIs transmitted from the source data during backup operations,

18 <u>wherein each version of the selected directory, file, or qtree is stored in a separate PCPI.</u>

1 36. (Cancelled)

1 37. (Previously Presented) The method as set forth in claim 35 wherein the steps of com-

2 municating and transmitting include formatting information into a network data manage-

3 ment protocol (NDMP).

1 38. (Previously Presented) The method as set forth in claim 35 further comprising activat-

2 ing user interface buttons associated with entries of the displayed selected information to

3 conduct either of a backup operation and a restore operation with respect to the entries.

1 39. (Currently Amended) A ~~computer-readable medium~~<u>system</u>, comprising:

2   a processor;

3   ~~said~~ <u>a</u> computer-readable medium including program instructions executed on the

4 processor to manage backup of data from a source system to a destination system and re-

5 store of backup data, relative to source data, from the source system to the destination

6 system, the program instructions performing the steps of:

7   communicating, by a management application, with each of the source system and

8 the destination system and transmitting requests to read a data organization residing on

9 each of the source system and the destination system to derive an index of directories,

10 files, or qtrees for each of the source system and the destination system;

11   scanning a plurality of persistent consistency point images (PCPIs) stored on the

12 destination system to generate the index of directories, files, or ~~qtrees~~<u>qtrees</u>, where each

13 directory, file, or qtree has one or more versions created at one or more different points in

14 time;

15   selecting a directory, file, or qtree to view; and

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16   displaying, with a user interface communicating with the management applica-

17   tion, only the selected directory, file, or qtree related to active data on the source system

18   derived from source system index related to active data and the selected directory, file, or

19   qtree related to backup data on the destination system derived from destination system

20   index related to PCPIs transmitted from the source data during backup operations,

21   wherein each version of the selected directory, file, or qtree is stored in a separate PCPI.

1   40. (Cancelled)

1   41. (Original) The computer-readable medium as set forth in claim 39 wherein the steps

2   of communicating and transmitting include formatting information into a network data

3   management protocol (NDMP).

1   42. (Currently Amended) A system, comprising:

2   a source storage system that generates a plurality of persistent consistency point

3   images (PCPIs), and transfers the plurality of PCPIs and data to a destination storage sys-

4   tem;

5   the destination storage system executes a management client, where the manage-

6   ment client organizes the plurality of PCPIs and the data into an index using a database to

7   allow the plurality of PCPIs and the data to be displayed in (a) a listing of source data en-

8   tries indexed by names of directories, file or qtrees of the source storage system, where

9   each directory, file, or qtree has one or more versions created at one or more different

10   points in time (b) a listing of source data entries indexed by names of the source storage

11   system, and (c) a listing of source data entries indexed by names of volumes of the desti-

12   nation storage system in which the backup data from the source data resides; and

13   an interface to select a data entry for a directory, file, or qtree, and the manage-

14   ment client returns a list of only the selected directory, file, or qtree and the one or more

15   versions of the selected directory, file, or qtree, wherein each version of the selected di-

16   rectory, file, or qtree is stored in a separate PCPI.

1   43. – 45. (Cancelled)

1   46. (Previously Presented) The system of claim 42, wherein the database stores the plu-

2   rality of PCPIs and rules for handling the plurality of PCPIs for retrieval by the interface

3   and the management client.

1   47. (Previously Presented) The system of claim 42, wherein the source storage system

2   upon initialization sends a base PCPI and data to the destination storage system.

1   48. (Previously Presented) The system of claim 42, further comprising a scheduler that

2   interfaces with the source storage system and performs backup operations of transmitting

3   backup data including one or more PCPIs and change data from the source storage sys-

4   tem to the destination storage system at a predetermined time interval.

1   49. (Currently Amended) A method, comprising:

2   transferring a plurality of persistent consistency point images (PCPIs) from a

3   source storage system to a destination storage system;

4   scanning the plurality of PCPIs to create an index of data structures in a database

5   on the destination system, wherein each data structure is a file, directory, or qtree and

6   each data structure has one or more versions created at one or more different points in

7   time;

8   selecting a data structure to view;

9   returning an entry for the selected data structure and entries for the one or more

10   versions of the selected data structure to allow a user to select a particular entry to re-

11   store, wherein each version of the selected data structure is stored in a separate PCPI.

1   50. (New) A method, comprising:

2   transferring a plurality of persistent consistency point images (PCPIs) from a

3   source storage system to a destination storage system;

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4   scanning the plurality of PCPIs to create an index of a file in a database on the

5   destination system, wherein the file has a plurality of versions with each version of the

6   file stored in a separate PCPI;

7   selecting the file to view; and

8   displaying the selected file and the plurality versions of the file to allow a user to

9   select a particular file to restore from the selected file and the plurality versions of the

10   file.